

steps for classifying the bottom area 12 of a OPC as acceptable, non-acceptable, or quasi-acceptable. First, the bottom edge area 12 of the OPC is illuminated 22 with a suitable illuminating device. Some examples of illuminating devices are light emitting diodes (LEDs), LASERs, or an emitter capable of emitting electromagnetic radiation of one or more wavelengths (i.e., a white light source). The reflected illumination from the bottom edge area 12 of the OPC is captured 24, where capturing the reflected illumination may be any suitable method for converting illumination intensity to a reference voltage or digital signal. The captured illumination is compared 26 with a predetermined threshold level to determine 28 if a first threshold level has been exceeded. If the first threshold has not been exceeded the OPC is classified as acceptable 216. If the first threshold has been exceeded the captured illumination is compared 29 with a second threshold level. If the captured illumination exceeds 210 the second threshold level the OPC is classified as non-acceptable 214 otherwise the OPC is classified as quasi-acceptable 212.

Referring now to Fig. 3 and there is shown a detailed method flow chart, corresponding to the method flow chart shown in Fig. 2, of one embodiment of the invention showing the steps for classifying the bottom area 12 as acceptable or non-acceptable; in Fig. 3A there is shown a schematic diagram of one implementation of a circuit for implementing the method shown in Fig 3. First the OPC bottom area 12 is illuminated 32 and reflected illumination is captured 34, and converted 35 to a voltage by a semi-conductor device such as a photodiode 3A2. The converted voltage is compared 36 to a predetermined voltage level after being amplified by an amplifier comprising a feedback resistor 3A4, an input resistor 3A6, and an operational

Q.1

Cont

amplifier 3A8. The predetermined voltage level may be set by reference to a known good OPC device with acceptable bottom edge residue. If the converted voltage exceeds 38 the predetermined voltage level as measured by voltmeter 3A10 the OPC device is classified 310, by 3A10 as non-acceptable; otherwise the device is classified as acceptable 312.

Referring now to Fig. 4 there is shown a detailed method flow chart of one embodiment of the invention showing the steps for classifying the bottom area 12 as acceptable, quasi-acceptable, or non-acceptable. First, the bottom area 12 of the OPC is illuminated 42 and reflected illumination is captured 44 by a charge coupled device (CCD) such as a digital camera. Through well known digital techniques the captured illumination is differentiated 46 into gray level pixel data or matrix cells. Dark areas of the bottom edge portion of the OPC due to BEW residue will correspond to dark pixels while lighter areas of the bottom edge portion will correspond to lighter pixels. A first threshold ratio is predetermined by determining a number of allowable dark pixels to the total number of pixels 48. For example, if a certain band is comprised of five dark pixels and the total number of pixels is fifty, the threshold ratio is one tenth or .1. The measured ratio of the device under test is then compared 49 with the first predefined threshold ratio that may be stored in a data storage area. If the ratio is determined 410 to have not exceeded the first predefined threshold ratio the OPC is classified as acceptable 418. If the ratio is determined 410 to have exceeded the first predefined ratio then a second comparison to a second predefined ratio is made 411. If the ratio is determined 412 to have exceeded the second predefined ratio the part is classified as non-acceptable 416; otherwise the part is classified as quasi-acceptable 414. For determining

Q1
Cont